

SNAKE RIVER FLOW AUGMENTATION IMPACT ANALYSIS APPENDIX

Prepared for the

**U.S. Army Corps of Engineers
Walla Walla District's**

**Lower Snake River Juvenile Salmon Migration
Feasibility Study and Environmental Impact Statement**

United States Department of the Interior

Bureau of Reclamation

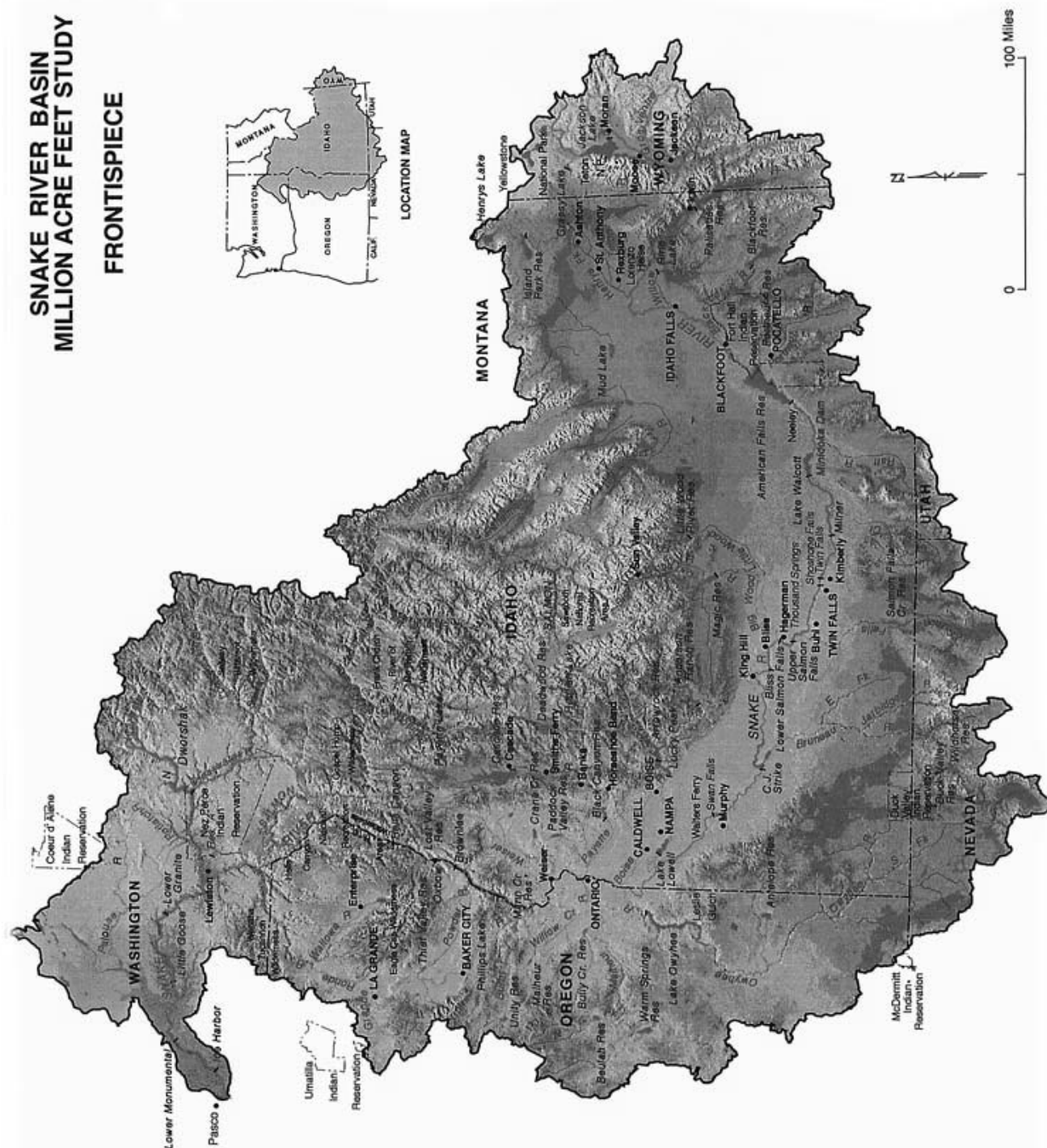
Pacific Northwest Region

Boise, Idaho

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SNAKE RIVER BASIN **MILLION ACRE FEET STUDY** **FRONTISPIECE**



Acronyms and Abbreviations

(Includes some common acronyms and abbreviations that may not appear in this document)

1427i	A scenario in this analysis that provides up to 1,427,000 acre-feet of flow augmentation with large drawdown of Reclamation reservoirs.
1427r	A scenario in this analysis that provides up to 1,427,000 acre-feet of flow augmentation with reservoir elevations maintained near current levels.
BA	Biological assessment
BEA	Bureau of Economic Analysis (U.S. Department of Commerce)
BETTER	Box Exchange Transport Temperature Ecology Reservoir (a water quality model)
BIA	Bureau of Indian Affairs
BID	Burley Irrigation District
BIOP	Biological opinion
BLM	Bureau of Land Management
B.P.	Before present
BPA	Bonneville Power Administration
CES	Conservation Extension Service
cfs	Cubic feet per second
Corps	U.S. Army Corps of Engineers
CRFMP	Columbia River Fish Mitigation Program
CRP	Conservation Reserve Program
CVPIA	Central Valley Project Improvement Act
CWA	Clean Water Act
DO	Dissolved Oxygen

Acronyms and Abbreviations

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DREW	Drawdown Regional Economic Workgroup
DDT	Dichlorodiphenyltrichloroethane
EIS	Environmental Impact Statement
EP	Effective Precipitation
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ETAW	Evapotranspiration of Applied Water
FCRPS	Federal Columbia River Power System
FERC	Federal Energy Regulatory Commission
FIRE	Finance, investment, and real estate
HCNRA	Hells Canyon National Recreation Area
HUC	Hydrologic unit code
I.C.	Idaho Code
IDFG	Idaho Department of Fish and Game
IDPR	Idaho Department of Parks and Recreation
IDWR	Idaho Department of Water Resources
IMPLAN	Impact Analysis for Planning, an input-output economic modeling framework that provides a detailed picture of a regional economy and predicts potential effects on that economy
INEEL	Idaho National Engineering and Environmental Lab
I-O	Input-Output
IPC	Idaho Power Company
ITA	Indian trust asset
IWRB	Idaho Water Resources Board
kW	Kilowatt

Acronyms and Abbreviations

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kWh	Kilowatt-hour
MAF	Million acre-feet
M&I	Municipal and industrial
mg/L	Milligrams per liter
MODSIM	A river basin hydrology network flow simulation model capable of assessing past, present, and future water management policies
MW	Megawatt
MWh	Megawatt-hour
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPPC	Northwest Power Planning Council
NPS	National Park Service
ODFW	Oregon Department of Fish and Wildlife
OWRD	Oregon Water Resources Department
PATH	Plan for Analyzing and Testing Hypotheses (see glossary)
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
RFC	River Forecast Center, National Weather Service
RM	River mile
ROD	Record of Decision
RPA	Reasonable and Prudent Alternative
SBC	Surface bypass and collection device
SHPO	State Historic Preservation Officer
SIIPR	Southern Idaho Irrigation Pumping Rate
SRDSS	Snake River Decision Support System
SR ³	Snake River Resources Review

Acronyms and Abbreviations

(Includes some common acronyms and abbreviations that may not appear in this document)

SRPA	Snake River Plain Aquifer
T&E	Threatened and endangered (species)
TCP	Traditional cultural property
TMDL	Total maximum daily load (refers to pollutants)
TMT	Technical Management Team
TSC	Reclamation's Denver Technical Service Center
TWG	Technical Work Group
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WGFD	Wyoming Game and Fish Department
U.S.C	United States Code

Glossary

A-run steelhead	An anadromous fish that spends an average of 1 year in the ocean before returning to spawning streams and attain a size of 4-8 pounds (see B-run steelhead).
Acre-foot	Volume of water equivalent to 1 foot deep over an area of 1 acre; 326,000 gallons.
Active storage	Reservoir space allocation available for release.
Acerbic	Living in the absence of oxygen or produced by such organisms.
Anoxic	Lack of oxygen to the extent that an organism is damaged.
Bank full	Maximum stream flow that raises the water level to the top of the bank without flooding.
B-run steelhead	An anadromous fish that spends an average of 2 years in the ocean and grow to 12-20 pounds as adults.
Blaney-Criddle program	A computer program that is used to estimate the consumptive water use of crops consumptive based on the type of crop and the environmental conditions of the area.
Conservation pool	A minimum reservoir elevation (or pool volume) target. Administratively determined, recognizing that lower elevations are possible during drought conditions.
Consumptive use	Use that permanently removes the water from the system.
Contracted storage space	Portion of the active storage space for which there are contracts with specific individuals and entities for use.
Cost allocation	A method of distributing the construction costs and the annual operating costs of Federal projects among the benefitting functions. This is a first step to identifying the amount of annual payment needed to recover the Federal cost of construction and operation of a project.
Dead storage	Reservoir storage allocation that is below the lowest outlet level and cannot be released from the pool by gravity.
Entrainment	Passing through a dam.
Escapement	The number of adult anadromous spawning fish that have returned to spawn.

Glossary

Exclusive flood control space	Reservoir storage allocation that is filled only to help regulate inflow to reduce downstream flood damage.
Flood control rules	Tables or graphs that indicate the amount of reservoir space to be maintained under various conditions to provide specific levels of flood control downstream.
Freshet	A substantial natural increase in streamflow, typically in the spring.
Four lower Snake River dams	Lower Granite, Little Goose, Lower Monumental, and Ice Harbor; owned and operated by the Corps.
Hells Canyon complex	Brownlee, Oxbow, and Hells Canyon Dams on the main Snake River; owned and operated by IPC.
Implementation Team	A multi-party group of senior-level policymakers established in NMFS 1995 BIOP to provide executive level management and direction over salmon protection efforts. Supervises the TMT.
Inactive storage	Reservoir storage allocation between dead storage and active storage elevations. Normally retained for specific operating requirements.
Joint-use storage	Active storage allocation that may be used for more than one purpose, most often flood control and irrigation.
Last-to-fill rule	A rule related to the operation of Idaho rental pools. The space occupied by water placed into the rental the previous year and used for downstream purposes can be filled only after all other contracted space fills. Without this rule the contractors that don't place water in the rental pool would be penalized in years that the reservoir does not fill.
Load	The total demand for electricity.
Nonprime farmlands	A USDA category of farmland that does not meet the qualifications for prime farmlands.
Lower Snake River	The reach of the Snake River from Brownlee Reservoir to the mouth.
Main stem	The major stream channel, exclusive of tributaries.
Middle Snake River	The reach of the Snake River from Milner Dam to Brownlee Reservoir (this section is sometimes included in the Upper Snake River designation).

Glossary

Natural flow rights	State granted water rights to use the natural flow of a stream, as opposed to reservoir storage.
Nonreimbursable costs	Federal project costs that are absorbed by the Federal Government as opposed to reimbursable costs to be repaid by specific beneficiaries.
Off-peak	Refers to electric load or generation at times when the electric load is significantly less than at other times.
On-peak	Refers to electric load or generation at times when the electric load is near the maximum during the day (usually during the morning on week days)
Power head	Hydraulic head (elevation of water) necessary for proper operation of hydroelectric generators. Part of the inactive space allocation.
Plan for Analyzing and Testing Hypotheses	A group of Federal, state, and tribal biologist that NMFS confers with to develop data relative to salmon survival and recovery.
Reacquired storage space	Contracted storage space that Reclamation has purchased from a spaceholder.
Reallocation	A change in the distribution of costs by function.
Reassigned storage space	Uncontracted storage space that Reclamation uses for designated purposes.
Reauthorization	Congressional action that changes the original authorization of a Federal project.
Reclamation Act of 1902	Established a Reclamation fund and authorized the Secretary of the Interior to use the fund to make examinations and surveys and to locate and construct irrigation works in the 16 (later 17) western states.
Reclamation Project	“The term ‘project’ shall mean any reclamation or irrigation project including incidental features thereof, authorized by the Federal reclamation laws, or constructed by the United States pursuant to said laws, or any project constructed or operated and maintained by the Secretary [of the Interior] through the Bureau of Reclamation for the reclamation of arid lands or other purposes.”
Reimbursable costs	Costs associated with a Federal Project that are required to be repaid by a non-Federal beneficiary.

Glossary

Rental pool	The functional process authorized by the Idaho Water Bank Statutes which allows local committees to administer rental of stored water. Three rental pools are currently operating: Upper Snake, Boise, and Payette. These rental pools administer only stored water. Reservoir spaceholder may consign stored water to the rental pool which then leases the water to applicants. A rental pool is essentially an accounting procedure for water rights and are not a physical structure.
Repayment contract	A permanent contract between Reclamation and an individual or entity that gives the shareholder use of project facilities in return for paying a portion of the construction and operating costs of a Reclamation project. See spaceholder contract.
River basin	The geographic area drained by a river.
River mile	The distance in miles from the mouth of a river to a given point upstream as measured following the center of the stream bed.
Run-of-river	Refers to hydroelectric power generation facilities that have limited water storage capacity so that the amount of power generated at any instant is generally proportional to the natural flow of the river.
Spaceholder	The individual or entity that hold a spaceholder contract.
Spaceholder contract	A type of repayment contract for reservoir space in which the contractor receives the water that accumulates in the contracted storage space. Usually includes the right to carry over water from year to year in the contracted space.
Subbasin	The geographic area drained by a stream that is tributary to another stream.
Taking	An action by a public governing body to appropriate a private asset; requires compensation.
Technical Management Team	An interagency group of fisheries managers and river operators that make inseason decisions on river operations based on the NMFS' 1995 BIOP for Snake River wild salmon and on the 1998 Steelhead BIOP (NMFS).
Total maximum daily load	The sum of the individual wasteload allocations (WLAs) for point sources, load allocations (LAs) for nonpoint sources and natural background and a margin of safety (MOS). TMDLs can be expressed in terms of mass per time, toxicity, or other appropriate measure that relates to a state's water quality standard.
Turnover (reservoir)	Mixing of stratified water zones (cold on bottom and warm on top) that normally occurs in the spring and the fall when weather conditions cause the top layer to become colder than the lower layer

Glossary

Uncontracted storage	That portion of the active reservoir pool not under contract.
Upper Snake River	The reach of the Snake River extending from Milner Dam to the headwaters (also occasionally used to indicate the Snake River from Brownlee Reservoir to the headwaters).
Waterbank	Idaho's water bank was initiated by a 1984 Idaho Law. It allows water rights holders and reservoir spaceholders to temporarily rent their water to other users through the State administered water bank or through local rental pools.
Water service contracts	A fixed-term contract where the buyer contracts to receive a specific amount of water each year.
Water rights	A type of property right administered by the state for use of state waters.

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